GIATEC SMARTROCK™

WIRELESS TEMPERATURE/STRENGTH SENSOR FOR CONCRETE

OVERVIEW

Giatec SmartRock™ is a ruggedized waterproof wireless sensor/logger for monitoring the temperature of concrete from fresh stage to hardened stage. The SmartRock™ can be placed in the concrete formwork (installed on the rebar) before pouring to monitor the temperature of concrete in situ. The continuous measurements are recorded on the SmartRock™ memory and can be downloaded any time during the concrete setting and hardening onsite using the mobile application on smartphone/tablet.

The continuous monitoring of concrete temperature can be used as a QC/QA method as well as maturity-based strength estimation of concrete. The filed monitoring of concrete temperature can also help with optimizing the curing temperature of concrete onsite.

APPLICATION

SmartRock™ can be used to monitor the temperature of fresh and hardened concrete. This can provide information on:

- Hardening of concrete
- Optimization of curing conditions
- Heating and cooling processes
- Quality control in the field
- Concrete maturity
- Estimation of strength (ASTM C1074)
- Concrete mix design optimization

FEATURES

The followings are unique features of this sensor:

- Wireless Bluetooth technology
- Ruggedized and waterproof design
- Real-time data (e.g. temperature, strength, max-min temperature) display
- Continuous measurement and recording of temperature
- Easy activation through tying the wires together (this can be used onsite to hold the sensor around rebar)
- Extended temperature sensor for deep elements and mass concrete
- Maturity calibration curve database
- Long battery life (about 4 months in room temperature)
- Operation software (Android and iOS apps) for smartphone and tablet
- Easy data sharing
- Extended cable for temperature measurement, within 45 cm (18") from the concrete surface
- Measurement and calculation in both metric and imperial units
- Patents pending

TECHNICAL SPECIFICATIONS

Reading Range	Resolution	Wireless Signal Range[1]	Dimensions	Temperature Cable Length
-30 ~ +80 °C (-22 to +176 °F)	±0.5 °C	8 meters in concrete (20-26 feet)	38 x 38 x 12 mm	40 cm (16")

[1] *The recommended depth for embedding the transmitter part of the sensor in concrete is 5 cm (2 inches). Within this depth, the user can communicate easily with the sensor at a distance of about 8 meters. The temperature sensor extension cable [40 cm (16") long] can then be placed anywhere within the concrete element.*

Note: Specifications are subject to change without notice.

SMARTROCK™ IN USE

The Giatec SmartRock™ sensor can be seamlessly integrated as part of the current practice for the real-time monitoring of concrete temperature and strength. The twistable sensor wires can be used to fix the sensor in particular locations on the rebar in the concrete slab before pouring concrete. After pouring, the SmartRock™ sensor (which is embedded within concrete) records the temperature variations and calculates the strength based on the maturity concept. The data can be collected and shared wirelessly at any time after pouring using the Giatec smartphone application (for both Android and iOS systems). The following picture shows an example project where SmartRock™ was utilized.